

Amendments to the Claims:

This listing of claims will replace all prior versions and listings, of claims in the application:

LISTING OF CLAIMS

1. (Original) An intermediate for an optical recording medium that has a central mounting hole formed in a central portion thereof and at least one kind of functional layer formed on one side thereof, for use in at least one of information recording and information reproduction, the intermediate being produced beforehand for manufacturing the optical recording medium,

the intermediate comprising a hollow cylindrical protruding portion protruding from one surface thereof on the same side as the one side of the optical recording medium,

wherein the intermediate has a circular recess formed in a central portion of the other surface thereof on a side opposite to the one side of the optical recording medium and having a diameter equal to a diameter of the central mounting hole, and a temporary central hole formed to extend through a central portion of the circular recess and having a diameter smaller than the diameter of the circular recess,

said hollow cylindrical protruding portion having an outer diameter smaller than the diameter of the central mounting hole and an inner diameter equal to or larger than the diameter of the temporary central hole, and having a central axis thereof substantially aligned with a center of the temporary central hole.

2. (Original) An intermediate as claimed in claim 1, wherein a recessed groove is formed in an inner bottom surface of the circular recess, in the vicinity of an inner peripheral surface of the intermediate defining the circular recess, along the inner peripheral surface.

3. (Original) An intermediate as claimed in claim 1, wherein the diameter of the temporary central hole is set to be equal to or larger than 2 mm.

4. (Original) An intermediate as claimed in claim 1, wherein the outer diameter of said hollow cylindrical protruding portion is set to be equal to or smaller than 10 mm.

5. (Original) An intermediate as claimed in claim 1, wherein a length of protrusion of said hollow cylindrical protruding portion from the one surface of the intermediate is set to be equal to or larger than 0.5 mm.

6. (Original) An intermediate, as claimed in claim 1, wherein the inner diameter of said hollow cylindrical protruding portion is set to be equal to the diameter of the temporary central hole.

7. (Original) A mold for molding an intermediate for an optical recording medium, the mold including a first mold and a second mold, for having molten resin injected into a cavity defined between the first mold and the second mold in a closed state thereof to thereby mold the intermediate,

wherein the first mold includes a sprue bush having a through hole formed through a central portion thereof, the through hole opening in an opposed surface of said sprue bush opposed to the second mold, for injection of the

molten resin therethrough, and having a diametrically expanded portion that is expanded with at least one step and opening in the opposed surface, and

the second mold includes a gate cutter formed with a hollow cylindrical portion protruding from a central portion of an opposed surface of said gate cutter opposed to the first mold, said hollow cylindrical portion having an outer diameter smaller than an inner diameter of the diametrically expanded portion, and

wherein when said gate cutter is moved toward said sprue bush in the closed state of the first mold and the second mold, the opposed surface of said gate cutter is protruded into the cavity, and at the same time, said hollow cylindrical portion enters the diametrically expanded portion, whereby a cylindrical space is defined between an inner peripheral surface of the diametrically expanded portion and an outer peripheral surface of said hollow cylindrical portion, as a portion of the cavity, while maintaining a distance between the opposed surface of said gate cutter and the opposed surface of said sprue bush shorter than a thickness of the intermediate.

8. (Original) A mold as claimed in claim 7, wherein a projection for forming a recessed groove is formed on an outer periphery of the opposed surface of said gate cutter.

9. (Original) A mold for molding an intermediate for an optical recording medium, the mold including a first mold and a second mold, for having molten resin injected into a cavity defined between the first mold and the second mold in a closed state thereof to thereby mold the intermediate,

wherein the first mold includes a sprue bush having a through hole formed through a central portion thereof, the through hole opening in an opposed surface of said sprue bush opposed to the second mold, for injection of the molten resin therethrough, and having a diametrically expanded portion that is expanded with at least one step and opening in the opposed surface, and

the second mold includes a molding sleeve having a hollow cylindrical shape and a gate cutter having a hollow cylindrical shape and slidably fitted in said molding sleeve, and

wherein when said molding sleeve and said gate cutter are moved toward said sprue bush in the closed state of the first mold and the second mold, an opposed surface of said molding sleeve opposed to said sprue bush is protruded into the cavity, and at the same time said gate cutter enters the diametrically expanded portion, whereby a cylindrical space is defined between an inner peripheral surface of the diametrically expanded portion and an outer peripheral surface of said gate cutter, as a portion of the cavity, while maintaining a distance between the opposed surface of said molding sleeve and the opposed surface of said sprue bush shorter than a thickness of the intermediate.

10. (Original) A mold as claimed in claim 9, wherein a projection for forming a recessed groove is formed on an outer periphery of the opposed surface of said molding sleeve.

11. (Original) A molding apparatus comprising:
a mold that includes a first mold and a second mold, for molding an intermediate for an optical recording medium by having molten resin injected into

a cavity defined between the first mold and the second mold in a closed state thereof,

wherein the first mold includes a sprue bush having a through hole formed through a central portion thereof, the through hole opening in an opposed surface of said sprue bush opposed to the second mold, for injection of the molten resin therethrough, and having a diametrically expanded portion that is expanded with at least one step and opening in the opposed surface, and

the second mold includes a gate cutter formed with a hollow cylindrical portion protruding from a central portion of an opposed surface of said gate cutter opposed to the first mold, said hollow cylindrical portion having an outer diameter smaller than an inner diameter of the diametrically expanded portion, and

wherein when said gate cutter is moved toward said sprue bush in the closed state of the first mold and the second mold, the opposed surface of said gate cutter is protruded into the cavity, and at the same time, said hollow cylindrical portion enters the diametrically expanded portion, whereby a cylindrical space is defined between an inner peripheral surface of the diametrically expanded portion and an outer peripheral surface of said hollow cylindrical portion, as a portion of the cavity, while maintaining a distance between the opposed surface of said gate cutter and the opposed surface of said sprue bush shorter than a thickness of the intermediate; and

urging means urging said gate cutter toward said sprue bush,

wherein after a start of injection of the resin, when pressure of the resin is high, said gate cutter is moved toward said second mold by the pressure of the

resin against a urging force of said urging means, to thereby allow the resin to fill the cavity, whereas when the pressure of the resin is lowered after completion of filling of the cavity with the resin, said gate cutter is moved toward said sprue bush by the urging force of said urging means.

12. (Original) A molding apparatus as claimed in claim 11, wherein a projection for forming a recessed groove is formed on an outer periphery of the opposed surface of said gate cutter.

13. (Currently Amended) A method of manufacturing an optical recording medium that has a central mounting hole formed in a central portion thereof and at least one kind of functional layer formed on one side thereof, for use in at least one of information recording and information reproduction,

the method including:

~~an intermediate preparing step of~~ preparing an intermediate as claimed in claim 1 ~~any one of claims 1 to 6~~ by resin molding;

~~a functional layer forming step of~~ forming the at least one kind of functional layer on the one surface of the prepared intermediate; and

~~a central hole forming step of~~ forming the central mounting hole through the intermediate having the at least one kind of functional layer formed thereon.